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TITLE: COMPOSITE ELECTROLYTE AND ITS USE

PUBN-DATE: December 18, 1998

INVENTOR-INFORMATION:

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, H01M010/40

ABSTRACT:

**PROBLEM TO BE SOLVED:** To enhance the molding processing and strength, facilitate the handling, stably increase the ion conductivity, and improve the safety and reliability at low cost by adding a specified alumina fine particle having a high specific surface area and a low water content to a polymer solid electrolyte.

**SOLUTION:** At least one alumina fine particle having a BET specific surface area of  $50 \text{ m}^2/\text{g}$  or more, a maximum diameter of  $5 \text{ }\mu\text{m}$  or less and a water content (Karl Fischer titration value) of 3000 ppm or less is added to a polymer solid electrolyte containing at least one polymer and at least one electrolytic salt in an amount ranging from 1 to 50 wt.%. The water content (Karl Fischer value) is set to 200 ppm or less, and the free acid quantity (neutralization titration value) is set to 100 ppm or less. In this case,  $\gamma$ -alumina thermally treated at  $600\text{--}120^\circ\text{C}$  is used as the alumina fine particle, and a one including oxyalkylene and/or urethane structure is contained as the polymer.

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PAT-NO: JP410334730A

DOCUMENT-IDENTIFIER: JP 10334730 A

TITLE: ORGANIC ELECTROLYTE AND ITS USE

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INVENTOR-INFORMATION:

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APPL-NO: JP09221467

APPL-DATE: August 18, 1997

INT-CL (IPC): H01B001/12, C08G061/02 , H01M010/40

ABSTRACT:

**PROBLEM TO BE SOLVED:** To provide a stable, high-performance, inexpensive electrolyte minimized in impurity and easy to manufacture and handle to provide a long-lived, highly reliable, and high-performance nonaqueous battery by adding an alumina fine particle having a high specific surface area of a specified value or more and a low water content of a specified value or less to an organic electrolyte.

**SOLUTION:** This organic electrolyte comprises at least one each of alumina fine particles, organic solvents and electrolytic salts. The alumina particle has a BET specific surface area of  $10 \text{ m}^2/\text{g}$  or more, a maximum diameter of  $5 \mu\text{m}$  or less, and a water content (Karl Fischer titration value) of 3000 ppm or less, and its addition amount is set to 0.05-30 wt.% of the whole electrolyte. The electrolyte preferably has a viscosity of 2000 cPs (shear rate of  $20\text{--}400 \text{ s}^{-1}$ ) or less at room temperature, a moisture value of 200 ppm or less, and a free acid quantity (neutralization titration value) of 100 ppm or less. An organic solvent is formed of cyclic and/or chain carbonates, and the electrolyte is preferably formed of an alkali metal salt, quaternary ammonium salt, or transition metal salt.

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US-PAT-NO: 5759714

DOCUMENT-IDENTIFIER: US 5759714 A

TITLE: Non-aqueous-electrolyte secondary battery

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Detailed Description Text - DETX (101):

Under an argon atmosphere, 65.3 g of diethyl carbonate was placed in a 200-ml narrow-necked polypropylene vessel, and 22.2 g of ethylene carbonate was dissolved, little by little, thereinto, with care taken so that the liquid temperature would not exceed 30.degree. C. Then, 0.4 g of LiBF.sub.4, and then 12.1 g of LiPF.sub.6, were dissolved, little by little, thereinto, in the polypropylene vessel, with care taken so that the liquid temperature would not exceed 30.degree. C. The obtained electrolyte (6) was a colorless transparent non-aqueous liquid having a specific gravity of 1.135. The water content thereof was 18 ppm (measured by an MKC 210-type Karl Fischer's Water Content Measuring Instrument (trade name; manufactured by Kyoto Denshi Kogyo KK), and the free acid content was 24 ppm (measured by neutralization titration with a 0.1N aqueous NaOH solution, using Bromothymol Blue as an indicator). Into this electrolytic solution, each compound listed in Table 1 was dissolved, so that a prescribed concentration would be attained, to adjust the electrolyte.